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Quantitative Finance >

Volume 4, 2004 - Issue 5: Special Issue Title: New Directions in Option Pricing

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GARCH and volatility swaps

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Pages 589-595 | Received 25 Nov 2003, Accepted 21 Jul 2004, Published online: 19 Jun 2011

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Abstract

This article discusses the valuation and hedging of volatility swaps within the frame of a



anonymous referee for their very helpful comments and feedback. Robert Trevor also helped the authors with the numerical examples and the calibration process. The authors remain responsible for any errors in this paper. The discussions were mostly carried on www.wilmott.com. This is likely to be the first quantitative finance paper ever created over an internet forum.

Notes

Alireza Javaheri is a Quantitative Analyst at Citigroup Global Markets Inc. in the Multi-Asset Derivatives Research area. The opinions expressed in this article are solely those of the author and do not necessarily reflect any views by Citigroup.

The GARCH(1,1) model implies that the stock process and the volatility process contain two uncorrelated Brownian Motions. In an NGARCH process, described by (1993), we have

where c is another parameter to be estimated and creates the correlation between the two processes. However this will not affect our discussion at all and therefore we will use the GARCH(1,1) model throughout this paper. The NGARCH process is discussed for



poses no problems.

See for example Haug (<u>1997</u>) pp. 169–70 and Wilmott (<u>2000</u>) pp. 299–301.

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